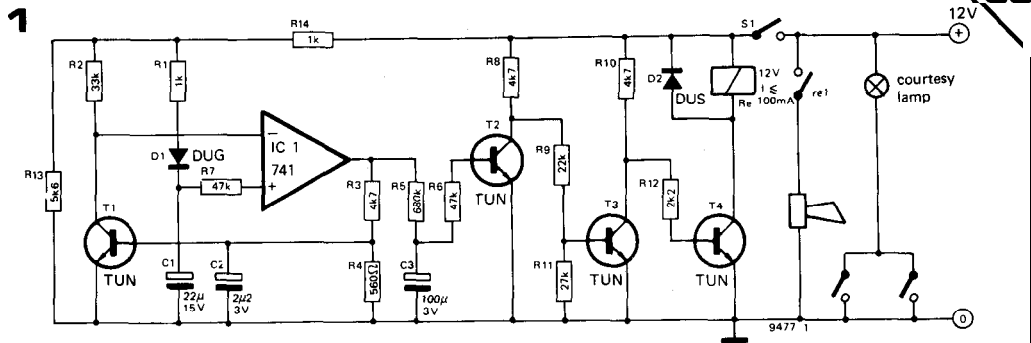


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car burglar alarm

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The theft of cars, and articles from cars is now a booming business. Fortunately most thieves like easy pickings, and the casual thief will tend to avoid vehicles that are securely locked with no valuables left visible. For the professional villain a more active form of deterrent is required, and this simple burglar alarm should fill the bill in most cases. It can be installed with a minimum of interference with the existing car wiring, and can be arranged to sound an alarm should a thief attempt to enter the vehicle.

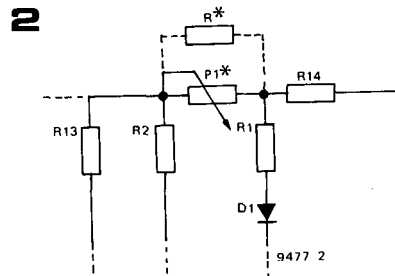
The circuit operates by sensing the small voltage drop that occurs along the battery lead when a door is opened and the courtesy light draws current. The circuit offers complete protection for a two door car. For four door cars where the courtesy light operates only on the front doors it may be advisable to fit extra courtesy light switches to the rear doors. If the car boot is fitted with an interior light then it also will be protected.

The complete circuit of the alarm is given in figure 1. It is armed by closing a concealed switch S1. When this occurs the inverting input of IC1 is pulled up to about 10 V via R2. C1 charges through R1 and D1 until the non-inverting input of IC1 acquires a voltage just below that on the inverting input, due to the forward voltage drop of D1. The output of IC1 is thus at 0 V. If the battery voltage subsequently falls suddenly due to the door being opened the voltage at the inverting input will fall below that on the non-inverting input, since C1 will hold the non-inverting input voltage constant. The output of IC1 will rise to +12 V and T1 will turn on, pulling the inverting input down to 0 V so that the circuit will remain latched even if the door is subsequently closed. R3 and C2 form a lowpass filter that prevents any extraneous interference from turning on T1.

After a short delay determined by the time constant $R5 \cdot C3$ T2 will turn on, turning off T3 which will turn on T4 and energise the

Figure 1. Complete circuit of the car burglar alarm.

Figure 2. The threshold voltage of the alarm may be decreased if the voltage drop is insufficient to trigger the alarm.



• see text

relay, sounding the horn. The delay allows the rightful owner to enter the vehicle and disarm the circuit by opening the concealed switch S1. C3 must be a low-leakage (i.e. tantalum) capacitor.

To ensure a reasonable voltage drop for reliable functioning the circuit should be connected to the +12 V line as near to the courtesy lamp as possible. It is obviously no use connecting the circuit direct to the battery terminal! If the circuit fails to function it may be necessary to lower the trigger threshold by inserting a 470 Ω potentiometer as shown in figure 2 and adjusting until the circuit operates. The resistance of the pot may then be measured and it can be replaced by a fixed resistor of the same value.

Operation

On leaving the car, open the door and then close the concealed switch. Since the door is already open the alarm will not be triggered, and the door can then be closed without triggering the alarm, which responds only to a drop in battery voltage.